

CHANGE OF OWNERSHIP, CHANGE OF REGISTRY? WHICH OBJECTS TO REGISTER, WHAT DATA TO BE FURNISHED, WHEN, AND UNTIL WHEN?

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ABSTRACT

The Registration Convention has been a useful instrument to regulate the recording of space objects and to attribute jurisdiction and control. However, it has been criticized because of its several weaknesses and imbalances, such as in the case of the registration of newly created space debris or the transfer of satellites in orbit to non launching States.

Today, satellite operators rely on more detailed data than is provided by the Registration Convention. Nevertheless and contrary to the opinion of a wide sector of the legal literature, this article postulates that the Convention does not need amendment. It is argued that the alleged imbalances can be corrected by an interpretation of the Convention in light of general public international law and by the adoption of national laws to supplement the provisions of the Convention.

INTRODUCTION

The Registration Convention¹ was adopted by the United Nations General Assembly on 12 November 1974 (Resolution 3235 (XXIX)), opened for signature on 14 January 1975, and eventually entered into force on 15 September 1976. It supersedes the General Assembly resolution 1721 (XVI) B of 20 December 1961 and is one of the five international space treaties.

According to Art. III (1) of the Registration Convention, the Secretary General shall maintain a Register in which information furnished in accordance with Art. IV shall be recorded. This register is administered by the Office for Outer Space Affairs (OOSA) on behalf of the Secretary General. There is full and open access to the register and OOSA has set up a searchable index which can be accessed via the internet.² But how relevant is the information, which is contained in the register?

Soon after its adoption, scholars, academic institutions and international organizations have been proposing amendments to the Convention. This article will show that changes to the international instruments are not needed. Rather, it is predicated that the efforts should be concentrated on urging States to ratify the Convention. Also, all deficiencies in the Convention can be solved through the adoption of complementary norms at the national level.

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WHICH OBJECTS TO BE REGISTERED?

The purpose of the Registration Convention is, *inter alia*, to furnish information which is called for by other, previous, space treaties.³ Therefore the Registration Convention recalls Art. VI of the Outer Space Treaty and also refers to the State on whose registry an object launched into outer space is carried.⁴ The Registration Convention also refers to the Rescue Agreement, which provides that a launching authority shall, upon request, furnish identifying data prior to the return of an object it has launched into outer space found beyond the territorial limits of the launching authority.⁵ Eventually, reference to the Liability Convention is made because liability of a launching State attaches to damage caused by their space objects.

The registration obligation for a "launching State"⁶ concerns its "space objects". As to the latter term, the Registration Convention provides that "[t]he term "space object" includes component parts of a space object as well as its launch vehicle and parts thereof"⁷. Therefore, launchers ought to be subject to the registration duty under the Convention. Concerning non-functional space objects, such as space debris, the situation is less clear. Because of the vague wording, the term "space objects" invites interpretation in this respect. The issue is whether "space objects" have to be functional or if non-functional space objects are also covered by the registration obligation of the Convention.

By way of an extensive interpretation, it is concluded that the definition of "space object" in the Registration Convention covers space debris since non-functional satellites were once functional. The same applies to "component parts" which once formed part of a functional space object. Because the Convention clarifies that space objects include component parts, it is argued that possible failures and separation of space objects are addressed. There is no apparent

reason why a non-functional space object should not continue to be a space object.

The question, however, is whether newly created space debris requires an individual registration; *i.e.* in addition to the space object from which such debris results. It could be argued that newly created space debris does not have to be registered because the space object from which it originated is already subject to the registration obligation under the Convention. But even if the Registration Convention is silent on this specific issue, there may be other sources of international law. As to those sources, Art. 38 (1) of the International Court of Justice (ICJ) Statute provides for the ICJ to apply "international conventions ... international customs ... and general principles of law recognized by civilized nations".⁸

General principles are of no direct relevance to the subject under study. The application of customary law, on the other hand, develops on the basis of general State practice. With regard to *opinio iuris*, a State must behave so that its conduct is "evidence of a belief that this practice is rendered obligatory by the existence of a rule of law requiring it".⁹ When prolonged practice is usually required, "instant customary law"¹⁰ has been suggested for international space law.

This would allow the period of time for a constantly confirmed and uniformly maintained behavior to be rather short.¹¹ Customary law exists next to treaty law¹² and its rules are binding *ex proprio vigore*, by their own force. Because of its nature as *ius nonscriptum*, but more importantly because of varying State practice,¹³ no rule of customary law is apparent with regard to registration of space objects.

It can be concluded that the Registration Convention clearly covers functional space objects such as satellites and space stations. The situation with regard to launch vehicles and space debris is less clear. But the drafters of the Registration Convention believed that a registry would assist in identifying space

objects. Therefore, it is argued that the registration obligation should be interpreted broadly to fulfill the purpose of the Convention.

WHAT DATA TO BE FURNISHED?

It should be noted that the States Parties to the Registration Convention believe that a mandatory registry for launched space objects would "assist in their identification".¹⁴ In other words, it is recognized that the UN registry is not considered the sole mean for identifying objects in outer space. In any event, Art. IV in conjunction with Art. II of the Registration Convention requires that each State of Registry furnish, at a minimum, to the UN

- (a) Name of launching State or States;
- (b) An appropriate designator of the space object or its registration number;
- (c) Date and territory or location of launch;
- (d) Basic orbital parameters, including:
 - (i) Nodal period,
 - (ii) Inclination,
 - (iii) Apogee,
 - (iv) Perigee;
- (e) General function of the space object¹⁵

for each space object carried on the national register. In addition to this obligation each State of registry may, from time to time, provide additional information concerning a space object carried on its registry.¹⁶ Such voluntary registration information was provided by Brazil, Israel, Italy, Luxembourg and Malaysia and such appears in document series A/AC.105/INF.1-407.¹⁷

Naming the launching State or States does not constitute a problem. When it comes to the appropriate designator, the situation is different. Absent of a definition, it is left to the registering State to decide what is "appropriate". As a result, some States (*e.g.* US) provide only the international

registration number whereas others (*e.g.* Russian Federation) officially provide only the name of the object.¹⁸ The same inconsistency can be observed with regard to date and territory or location of launch as some launches outside the territory of the State of registry are not marked as such.¹⁹

Most unsatisfying is the requirement to provide basic orbital parameters. There various ways to chose a reference point for the required data (*e.g.* center of the Earth vs. Earth surface) but more importantly the required minimum information does not completely describe the position of a space object. According to Art. IV (1) it is not clear if this information is to be provided for initial or eventual orbits or even continuously. Therefore, the provided information is of little use in terms of collision avoidance or space debris observation and the registration obligation could be extended and/or detailed.²⁰

Moreover, registering States are under an obligation to provide the general function of the space object. This information is often provided without real information content (*e.g.* "Experimental-technology mission" or "Space research and exploration" or "Development of heavier spacecraft"). Therefore, this information is of little value. So it comes as no surprise that States rarely use the chance to submit additional information in accordance with Art. IV (2) Registration Convention. The same applies to the obligation to take off the register space objects, once they are no longer in orbit. It becomes clear that the utility of the UN Register directly depends upon the timely, accurate and complete notification by the responsible launching State.²¹

WHEN AND UNTIL WHEN IS SUCH DATA TO BE FURNISHED?

The Registration Convention also mandates States to communicate certain information regarding the space object recorded at the national level to the Secretary-General of the United Nations, who in turn must maintain a central registry where the information furnished by the States is recorded.²² The Convention makes no specific reference to the time in which the information is to be given, *i.e.*, before or after the launch. Since the Convention is silent on this matter, States are free to decide on the time to make the notification to the Secretary-General of the United Nations. However, in light of the object and the purpose of the Convention, the notification, if possible, should be made prior to the launching or within a reasonably short time after it.

CHANGE OF OWNERSHIP, CHANGE OF REGISTRY?

The State of registry has been defined in the Registration Convention as "a launching State on whose registry a space object is carried in accordance with article II". From this definition, it follows that there may be only one State of registry and that the State of registry has to be one of the launching States, *i.e.* a State which launches or procures the launching of a space object; a State from whose territory or facility a space object is launched²³. In the event that there are several launching States these have to determine which one of them will register the object in its national registry. These States may further agree on the application of certain aspects of the legislation of the State which will not act as State of registry.²⁴

Difficulties have arisen with respect to the transfer of satellites in orbit, especially in the case of sale of satellites. In this respect, two sets of facts have to be differentiated: the transfer of satellites between launching States and the transfer of satellites to a non launching State.²⁵ There have been some cases in practice, such as the transfer of

satellites registered in the United Kingdom to China as a consequence of the hand over of Hong Kong or the sale of Canada's Anik CI and CII satellites to Argentina,²⁶ among some other ones. These isolated cases may not be considered to amount to a general and consistent practice of States followed from a sense of legal obligation, and thus there is no rule of customary international law governing the transfer of satellite ownership in orbit.²⁷ Since recourse to general principles does not either offer any solution to this problem the analysis must be done exclusively in light of the conventional sources.

In this respect, the legal literature agrees that transfers of satellites in orbit among launching States would be permitted under the Registration Convention and would not offer major difficulties, such as is evidenced by the Hong Kong precedent.²⁸ However, with respect to the transfer of ownership in orbit to a non launching State, the answer given in the literature is that the Registration Convention does not permit any modification in this case.²⁹ This assertion ignores the full array of possibilities permitted both by the Convention and general international law. In this respect, the Registration Convention allows the possibility of launching States to conclude agreements on jurisdiction and control over the space object and over any personnel thereof.³⁰ Thus, launching States can decide to transfer certain jurisdictional rights to others, such as in the case of criminal law under the Intergovernmental Agreement on the International Space Station.³¹ As put forward by Aldo Cocca, this reflects the principle that special agreements override general ones and the unitary criteria of Art. II (1) of the Convention.³²

Nothing in Art. II of the Registration Convention prohibits the transfer of all the jurisdictional and control rights. Therefore, it is legally possible for a State to register a space object and to enter into an agreement with another launching State to transfer part or all of the rights and obligations arising from the registration of a space object. Moreover, it is legally tenable to transfer

rights to a non launching State, for the Registration Convention simply prescribes that any such agreement must be made among the launching States. In this respect, a launching State which intends to transfer rights to a non launching State will have to conclude with all the other launching States the transfer of jurisdiction and control rights and obligations to a third non launching State.³³ Under general public international law, the stipulation of rights to a third State is permitted both under customary and conventional law. In effect, in the Free Zones Case, the Permanent Court of International Justice held that "it cannot be lightly presumed that stipulations favorable to a third State have been adopted with the object of creating an actual right in its favor. There is however nothing to prevent the will of sovereign States from having this object and this effect. The question of the existence of a right acquired under an instrument drawn between other States is therefore one to be decided in each particular case: it must be ascertained whether the States which have stipulated in favor of a third State meant to create for that State an actual right which the latter has accepted as such."³⁴ Furthermore, Art. 34 of the Vienna Convention establishes that no rights and responsibilities may be created for third parties, except with the consent of the third party. In such case, there must be acceptance of the third party. In case when the parties intended to create a benefit, the acceptance may be presumed. However, in cases when the States created an obligation acceptance must be in writing.³⁵

Therefore, the transfer of satellite ownership in orbit is legally possible under international law. This, however, requires an agreement among the launching States to transfer all of the jurisdiction and control rights and obligations in favor of a third non launching State. In light of customary and conventional international rules on effects of treaties to third parties acceptance in writing of the non launching State is essential.

CONCLUSIONS AND RECOMENDATIONS

The Registration Convention has been a useful instrument. But there is room for improvement. This concerns both the adherence to the Convention but also details of the registered information. For practical purposes, today many satellite operators rely on more comprehensive data, such as the Two-Line-Elements,³⁶ for locating and tracking their satellites.

To make the Registration Convention even more attractive it would be desirable to have national laws with binding due dates for registration of objects. The recording of the requested data should be made in a reasonably short period after the launch, such as one month, for example. In addition to this, more precise information for the operational, and not the initial, orbit for spacecraft should be required.

Several prestigious international organizations have recently initiated studies aimed at creating new rules of international law or interpreting existing international norms to adapt them to the new scenario created by the increasing participation of private commercial entities in the pursuit of space activities.

Following the mandate of its 68th Conference, the Space Law Committee of the International Law Association conducted in depth studies geared toward reviewing the Space Treaties so as to establish the need for changes to keep pace with the present commercial context.³⁷ In connection with these studies, many scholars expressed their view in favor of adopting new substantive or interpretative rules of international law to accommodate the alleged needs of the space industry.³⁸

COPUOS' Legal Subcommittee also indicated a certain trend to revise existing norms of international law to adapt them to a new private and commercial scenario. For example, it included the review of the status

of all the outer space treaties and conventions as a response to the accumulation of recommendations for defining and extending concepts of space law,³⁹ and the study of the legal concept of launching State as contained in the Liability Convention and the Registration Convention.⁴⁰ Furthermore, many of its delegates voiced proposals for reviewing the international treaties.⁴¹

Several authors have also advocated for changing the international legal scenario alleging a need to provide the space industry with a clearer framework. For example, Aldo Cocca recommends the adoption of protocols to revitalize the Outer Space Treaty and the elaboration of new international instruments.⁴² Karl-Heinz Böckstiegel struggled both within the International Law Association and other forums to develop a system of dispute settlement for space activities.⁴³ Based on the recommendations of international scholars, Eileen Galloway identified an extensive set of issues to reformulate the five legal instruments, which embraces the creation of new international institutions, including a world space agency, the adoption of insurance and liability provisions, and new norms clarifying the relation between national governments and the private sector.⁴⁴

However, the review of the laws of the States which enacted national space legislation shows that any possible legal vacuum in the international space legal framework has been filled by domestic measures. Thus, for example, States have efficiently adopted a series of mechanisms to deal with the issue of the existence of multiple appropriate States both on a case by case basis⁴⁵ and through the enactment of specific provisions, such as the extraterritorial effects of the licensing requirements of the Commercial Space Launch Act⁴⁶ or the exemption mechanisms contemplated in the Australian Act when a space activity has been licensed by a foreign State⁴⁷, or the exemption certification of the UK Act on Outer Space Activities.⁴⁸

Furthermore, the space industry has not advocated for any modifications in the

international space legal scenario.⁴⁹ Therefore, new international rules or new interpretations of existing ones are clearly not needed, and they even risk imposing new and unnecessary burdens to the space launch industry and its customers.⁵⁰ Rather, national legislation should be to deal with those issues where the Registration Convention fails to provide an adequate solution. COPUOS' role, should thus be to urge States to adopt national legislation to implement the requirements arising from the Registration Convention and to deal with those aspects which were not the object of consensus at the time of the enactment of the Convention.

ANNEX 1

NORAD Two-Line Element Set Format

Data for each satellite consists of three lines in the following format:

AAAAAAAAAAAAAAAAAAAAAAAAAAAA

1 NNNNU NNNNAAA
 NNNNN.NNNNNNNN +.NNNNNNNN
 +NNNNN-N +NNNNN-N N NNNNN

2 NNNNN NNN.NNNN NNN.NNNN
 NNNNNNN NNN.NNNN NNN.NNNN
 NN.NNNNNNNNNNNNNNN

Line 0 is a twenty-four character name (to be consistent with the name length in the NORAD SATCAT).

Lines 1 and 2 are the standard Two-Line Orbital Element Set Format identical to that used by NORAD and NASA. The format description is shown on the right.

Line 1	
Column	Description
01	Line Number of Element Data
03-07	Satellite Number
08	Classification (U=Unclassified)
10-11	International Designator (Last two digits of launch year)
12-14	International Designator (Launch number of the year)
15-17	International Designator (Piece of the launch)
19-20	Epoch Year (Last two digits of year)
21-32	Epoch (Day of the year and fractional portion of the day)
34-43	First Time Derivative of the Mean Motion
45-52	Second Time Derivative of Mean Motion (decimal point assumed)
54-61	BSTAR drag term (decimal point assumed)
63	Ephemeris type
65-68	Element number
69	Checksum (Modulo 10) (Letters, blanks, periods, plus signs = 0; minus signs = 1)

Line 2	
Column	Description
01	Line Number of Element Data
03-07	Satellite Number
09-16	Inclination [Degrees]
18-25	Right Ascension of the Ascending Node [Degrees]
27-33	Eccentricity (decimal point assumed)
35-42	Argument of Perigee [Degrees]
44-51	Mean Anomaly [Degrees]
53-63	Mean Motion [Revs per day]
64-68	Revolution number at epoch [Revs]
69	Checksum (Modulo 10)

Source: <http://celestrak.com/NORAD/documentation/tle-fmt.shtml>

REFERENCES

¹ As of 1 February 2001, 43 States have ratified, 4 have signed, and two international intergovernmental organizations (European Space Agency and European Organization for the Exploitation of Meteorological Satellites) have declared their acceptance of the rights and obligations provided for in the Registration Convention. See UN Office for Outer Space Affairs online <http://www.oosa.unvienna.org/SORegister/register.htm>

² *Ibid.* at <http://registry.oosa.unvienna.org/oosa/index/index.stm>

³ *I.e.* the *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies* (the "Outer Space Treaty", adopted by the General Assembly in its Resolution 2222 (XXI), opened for signature on 27 January 1967, entered into force on 10 October 1967, 96 ratifications and 27 signatures (as of 1 February 2001); the *Agreement on the Rescue of Astronauts and the Return of Objects Launched into Outer Space* (the "Rescue Agreement", adopted by the General Assembly in its Resolution 2345 (XXII), opened for signature on 22 April 1968, entered into force on 3 December 1968, 87 ratifications and 26 signatures (as of 1 February 2001); the *Convention on International Liability for Damage Caused by Space Objects* (the "Liability Convention", adopted by the General Assembly in its Resolution 2777 (XXVI), opened for signature on 29 March 1972, entered into force on 1 September 1972, 81 ratifications and 26 signatures (as of 1 February 2001).

⁴ See Preamble of the Registration Convention.

⁵ *Ibid.*

⁶ As defined by Art. I (a) Registration Convention.

⁷ Art. I (b) Registration Convention. Emphasis added. The same definition is used by Art. I (d) Liability Convention.

⁸ Statute of the International Court of Justice, see Charter of the United Nations, 26 June 1945, Can. T.S. 1945 No. 7 at 48.

⁹ *North Sea Continental Shelf Case*, I.C.J. Reports 4 at 45 (1969).

¹⁰ At first glance a *contradictio in terminis*, the concept has been suggested taking into account the rapid development in the space sector as "traditional" custom has been bypassed as a source of law. See *Studies in International Space Law* (Oxford: Clarendon Press, 1997) at 124-149 & 191-193.

¹¹ *North Sea Continental Shelf Case*, *supra* note 9 at 44: "Although the passage of only a short period of time is not necessarily, or of itself, a bar to the formation of a new rule of customary international law on the basis of what was originally a purely conventional rule,..."

¹² Parties to a treaty can deviate from customary law with the limit of compulsory norms of *ius cogens*. See *Vienna Convention on the Law of Treaties*, 23 May 1969, 1155 U.N.T.S. 331, Art. 53 [hereinafter *Vienna Convention*]. The Convention, being an international treaty itself, is binding *inter partes* only but with many norms considered to be restatements of customary international law, it is an important instrument. On the role of *ius cogens* in international law see generally F. G. v. d. Dunk "Jus Cogens Sive Lex Ferenda: Jus Cogendum?" T. L. Masson-Zwaan & P. M. J. Mendes De Leon, eds., *Air and Space Law: De Lege Ferenda* (Dordrecht: Martinus Nijhoff Publishers, 1992) 219-239.

¹³ The U.S. is announcing all objects, including newly discovered space debris. Providing information also about their decay in the atmosphere; the Russian Federation only announces launch and decay of functional objects; in addition to functional objects, information is sometimes provided on last stages of launchers, but never on space debris, by China, France and India. See P. Lála "The United Nations Register of Objects Launched into Outer Space"

Presentation to the United Nations/International Institute of Air and Space Law Workshop on Capacity Building in Space Law, The Hague, Netherlands, 18-21 November 2002.

¹⁴ See Preamble of the Registration Convention. Emphasis added.

¹⁵ Art. IV (1) Registration Convention.

¹⁶ Art. IV (2) Registration Convention.

¹⁷ P. Lála, *supra* note 13.

¹⁸ This information is nevertheless collected by OOSA. Such information is listed in square brackets and highlighted in green, which signifies that it has been obtained from other sources and has not been communicated to the United Nations in conformity with the Convention or Resolution 1721 B (XVI). See OOSA online Index of Objects Launched into Outer Space, Outer Space Affairs online <http://registry.oosa.unvienna.org/oosa/index/index.stm>.

¹⁹ P. Lála, *supra* note 13.

²⁰ See *infra* Chapter Conclusions and Recommendations.

²¹ For a listing of unregistered satellites see J. McDowell "Adherence to the 1976 Convention on Registration of Objects Launched into Outer Space" Somerville, MA., 1994 Dec 23, online http://www.harvard.edu/~jcm/space/un/un_paper1.html and for the submission of incorrect data see J. McDowell "United States Military Spacecraft: Some Deductions From the United Nations Data" Somerville, MA., 1994 Dec 23, online http://www.harvard.edu/~jcm/space/un/un_paper2.html.

²² There is full and open access to the information of this central registry. The Convention is an improvement over the voluntary registration system not only because it makes registration mandatory but also in view of the fact that it provides for uniformity in relation to the data to be reported. See S. Gorove, "Convention on Registration of Objects Launched into Outer Space. Analysis and Commentary" (1976) 19 *IISL* at 292.

²³ A. A. Cocca, "Registration of Space Objects", N. Jasentuliyana & R.S.K. Lee eds., *Manual on Space Law* (New York: Oceana, 1979) Vol. 1 at 180.

²⁴ J. Hermida, *Commercial Space Law: International, National and Contractual Aspects* (Buenos Aires: Ediciones Depalma, 1997) at 63. It must be highlighted that in the International Governmental Agreement on the Space Station, States opted for the registration in a separate way of each element contributed by the States. European States delegated this responsibility to the European Space Agency. In effect, pursuant to Art. 5 of the Agreement each partner will register as space objects the flight elements which it provides, which are all listed in an annex to the Agreement. IGA, Art. 5.

²⁵ J. Hermida, *Legal Basis for a National Space Legislation*, (DCL, Thesis, McGill University, 2003) [unpublished], at 65.

²⁶ In order to establish a temporary satellite system to comply with ITU timelines Argentina purchased the Anik CI and Anik CII satellites to Telesat Canada by the Argentine corporation Paracom S.A. Both companies -Paracom and Telesat- formed the Paracomsat joint venture, which was in charge of the operation of the Anik satellites. Both Canadian satellites had to be moved approximately 30° to the East from their original position, to be situated at 76° West (Anik CI) and 72° West (Anik CII). Paracomsat leased transponder capacity not only to Argentine corporations -ATC Cable, Crónica TV, Canal 8 de Mar del Plata-, but also to Uruguayan television channels -4, 10, and 12 of Montevideo-, which sets the basis for a potential regional system. The satellites remained registered in Canada. J. Hermida, "Argentine Space Law and Policy" (1996) XXI-II *Ann. Air & Sp. L.* at 177 [hereinafter "Argentine Space Law and Policy"].

²⁷ *Ibid.* at 178.

²⁸ R. J. Lee, "Effects of Satellite Ownership Transfers on the Liability of the Launching States" (2000) 43 *IISL* at 148. Kerrest, "Remarks on the Notion of Launching State" (1999) 41 *IISL* at 309.

²⁹ Kerrest, "Remarks on the Notion of Launching State" (1999) 41 *IISL* at 309.

³⁰ Registration Convention, Art. II.

³¹ *Agreement among the Government of Canada, the Governments of Member States of the European Space Agency, the Government of Japan, the Government of the Russian Federation, and the Government of the United States of America concerning Cooperation on the Civil International Space Station, signed January 29, 1998*, Art. 22.

³² A. A. Cocca, "Registration of Space Objects", in N. Jasentuliyana & R.S.K. Lee eds., *Manual on Space Law* (New York: Oceana, 1979) Vol. 1 at 180.

³³ Registration Convention, Art. II (2).

³⁴ Free Zones Case, France v. Switzerland, 1932, PCIJ at 97.

³⁵ Vienna Convention, Art. 34.

³⁶ E.g. the spacecraft NOAA 14 would be described as follows:

1. 23455U 94089A 97320.90946019

.00000140 00000-0 10191-3 0 2621

2. 23455 99.0090 272.6745 0008546

223.1686 136.8816 14.11711747148495

and the information could be de-coded according to the table shown in Annex 1.

Each set consists of two 69-character lines of data which can be used together with NORAD's SGP4/SDP4 orbital model to determine the precise position and velocity of a spacecraft.

³⁷ M. Williams, Report: Review of Space Law Treaties in View of Commercial Space Activities (International Law Association: London, 2000) at 16.

³⁸ *Ibid.* at 2.

³⁹ E. Galloway, "Guidelines for the Review and Formulation of Outer Space Treaties", (1998) 41 *IISL* at 245.

⁴⁰ Official Records of the General Assembly, Fifty-second session, Supplement No. 20 (A/52/20).

⁴¹ M. Williams, Report: Review of Space Law Treaties in View of Commercial Space Activities (International Law Association: London, 2000) at 14.

⁴² A. A. Cocca, "A Way to Complement, Enforce and Improve the Space Treaty and

Related International Instruments of Space Law", (1992) 35 *IISL* at 43.

⁴³ K. H. Böckstiegel, "Developing a System of Dispute Settlement Regarding Space Activities", (1992) 35 *IISL* at 27.

⁴⁴ E. Galloway, *supra* note 39 at 249.

⁴⁵ For example, under the British Act on Outer Space Activities, the Secretary of State may exempt persons or activities if satisfied that the requirement is not necessary to secure compliance with the international obligations of the United Kingdom. In these cases, an order must be made by statutory instrument, subject to annulment in pursuance of a resolution of either House of Parliament. United Kingdom Act on Outer Space Activities, 1986 Chapter 38, Art. 3 (3).

⁴⁶ J. Hermida, "Risk Management in Commercial Launches", (1997) *Space Policy* at 13.

⁴⁷ Australian Space Activities Act 1998: No. 123, 1998, Parts 11, 13 and 15.

⁴⁸ United Kingdom Act on Outer Space Activities, 1986 Chapter 38, Art. 3 (2) (b).

⁴⁹ E. A. Frankle & E. J. Steptoe, "Legal Considerations Affecting Commercial Space Launches From International Territory", (1999) 50 *IISL* at 10.

⁵⁰ *Ibid.* at 10. This study, however, endorses the encouragement to States for the approval of the option included in paragraph 3 of the General Assembly's Resolution 2777 (XXVI) for the decisions of the Claims Commission to be binding.